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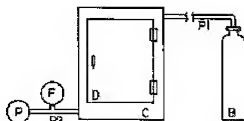
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(54) METHOD FOR KEEPING AND IMPROVING COLOR-DEVELOPMENT OF MEAT

(57)Abstract:

PURPOSE: To keep and improve the color-development of meat and to keep the freshness, color, taste and flavor of the meat over a long period by contacting meat with carbon monoxide gas in a closed vessel to effect the absorption of the gas and discharging the carbon monoxide gas from the vessel.

CONSTITUTION: Meat of fish, poultry or animal is made to contact with carbon monoxide gas in a closed vessel C to effect the absorption of the gas and, thereafter, the carbon monoxide gas is discharged to improve the color-development of the meat and keep the color and taste of the fresh meat over a long period. The method is especially effective for the treatment of tuna meat.



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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application]In this invention, coloring of meat, such as fish meat, a chicken, and flesh of animals, is improved, and while maintaining coloring of a fresh state over a long period moreover, flavor is also maintained.

Therefore, goods appearance is improved and consumers' attractiveness to consumers and appetite are made to stimulate.

[0002]

[Description of the Prior Art]Maintaining coloring of a fresh state for a long period of time has been carried out by sealing meat, such as fish meat, a chicken, and flesh of animals, with gas, such as nitrogen gas, hydrogen gas, and carbon dioxide, conventionally.

[0003]

[Problem(s) to be Solved by the Invention]When saving meat, such as fish meat, a chicken, and flesh of animals, at low temperature (for example, inside of a refrigerator, about 5 **), or a room temperature, in flesh of animals, may set what is called a maturing period, and may increase flavor, but, coloring of a state fresh after usual meat or said flesh of animals also passes a maturing period -- discoloring (it is to the beef and dark red in the case of a tuna from a scarlet color) -- flavor also worsens. Especially in the case of a tuna, loss of coloring of a fresh state lowers commodity value greatly early.

[0004]Therefore, although the method of sealing the aforementioned meat with gas, such as nitrogen gas, hydrogen gas, and carbon dioxide, has succeeded in maintaining coloring of the fresh state of meat once, it has left the still more nearly following technical problem.

[0005]1. I would like to extend further the period which maintains coloring of a fresh state. The method of being effective is required for especially a tuna.

[0006]2. Once it loses coloring of a fresh state, the original coloring cannot be recovered depending on the aforementioned method.

[0007]3. In order not to diffuse gas, such as nitrogen gas, hydrogen gas, and carbon dioxide, and to make effect maintain, it must pack with the film which does not make gas penetrate, and need the special device for a package, and package cost becomes expensive.

[0008]

[Means for Solving the Problem]After contacting carbon monoxide gas to meat and making it absorb in a well-closed container, by removing carbon monoxide gas, coloring of meat can be maintained and it can improve.

[0009]

[Example]Although this invention can improve coloring of meat, such as fish meat, a chicken, and flesh of animals, and coloring and the flavor of a fresh state can be maintained, since it is a case of a tuna that it is the most effective, one example in the case of a tuna is described below.

[0010]Although it is saved in a cold storage warehouse after freezing a tuna quickly by -50 °C in the state as it is, without usually judging immediately after a fish catch or landing, and it judges and thaws, and it responds and packs with demand and being shipped to it, As for the process which carbon monoxide gas is contacted to the tuna of this invention, and is made to absorb, in the expedient point of an effect and a process, it is desirable to carry out in the above-mentioned defrosting and the middle of a package.

[0011]If it explains in detail, in order to ship the tuna saved at -50 °C--55 °C, it takes out from a cold storage warehouse, and it quadrisections perpendicularly by a hand saw, is considered as what is called 4 rates or a loin, then it trichotomizes horizontally, and is considered as what is called the chunk at the time (only the word called chunk below is used). At this time, temperature up of the tuna is carried out to -40--45 °C. Next, after thawing using a high frequency refrigeration thawing apparatus and wiping dirt, it judges still smaller as occasion demands, and is considered as SAKU or stake (only the word called stake below is used.). At this time, temperature up of the tuna is carried out to -2.5--3.0 °C. Finally it packs a piece every, and puts and ships to a styrene foam resin made container with ice. After shipment is refrigerated at around 5 °C. Although carbon monoxide gas is contacted to tuna fish meat (it carries out in distinction from the tuna before division below, a chunk and stake are named generically, and it is described as tuna fish meat.) in the state of a chunk or stake immediately after defrosting and just before a package and it is made to absorb in this example, Although carbon monoxide gas may be contacted before refrigeration or during cold storage and it may be made to absorb, operation is difficult practical. It is [that carbon monoxide gas is hard to be absorbed in a frozen state] unsuitable.

[0012]Next, an easy example of a device which enforces the method of this invention is shown.

Drawing 1 is the front view and C has equipped with the door D which takes meat with the container made from stainless steel, enabling free opening and closing. When closed down, it must be made for the door D to have to seal the container C thoroughly. B has connected with the container C with the pipe P1 with the cylinder filled up with carbon monoxide gas. P is connected with the container C with the pipe P2 with the pump which discharges carbon monoxide gas from the container C. F is a burner from which it burns and the carbon monoxide gas discharged from the container C is removed.

[0013]The door D of the container C is opened to contacting carbon monoxide gas to tuna fish meat, and tuna fish meat is arranged with a suitable space. After the pump P removes the air in the container C, the valve of the cylinder B is opened and carbon monoxide gas is introduced in the container C. Although the pressure of the carbon monoxide gas in the container C has so early absorption of carbon monoxide gas that it is high, 1-2 atmospheres may usually be sufficient, and operation is the easiest to consider it as ordinary pressure.

[0014]If it is stake, it will be contacted to carbon monoxide gas for 2 to 3 hours, and will be made to absorb for 4 to 6 hours with a -2.5--3.0 ** state, if the tuna fish meat put in to the container C is usually a chunk after wiping the aforementioned dirt. As for the carbon monoxide gas with which it is filled up in the container C at the beginning, since carbon monoxide gas is absorbed by tuna fish meat and decreases at this time, it is more desirable to consider it as quantity with superfluous mist at about 2 atmospheres than tuna fish meat absorbs. The carbon monoxide gas 4-5l. of ordinary temperature ordinary pressure is usually consumed per 100 kg of tuna fish meat by this processing.

[0015]After finishing carbon monoxide gas contact operation, the carbon monoxide gas in the container C is attracted and discharged using the pump P. Although this discharged carbon monoxide gas is applicable to contact with tuna fish meat again, it is desirable to mix air and to make it burn by a burner.

[0016]If one copy of carbon monoxide gas is replaced by gas, such as nitrogen gas, hydrogen gas, and carbon dioxide, the almost same result as the time of using carbon monoxide gas alone can be obtained, and it will become some cost cut.

[0017]It packs at a time 1 piece of the chunk or stake which finished the above-mentioned processing, and with ice, it is put into the container made from styrene foam, and is shipped. After a package needs to refrigerate at around 5 **.

[0018]If it replaces with the container C of an above device and the plastic sheet bag manufacture with sufficient sealing nature like a vinylidene-chloride-resin sheet is used, the method of this invention can be enforced without choosing a place, and the expense which a device moreover takes can be reduced.

[0019]

[Effect of the Invention]The meat which contacted and made carbon monoxide gas absorb by

this invention can maintain coloring and the flavor of a fresh state over a long period of time. And coloring which fell before processing further is also improvable. These effects are especially remarkable in tuna fish meat. Therefore, a cleanup cost can be reduced, while being able to maintain coloring and the flavor of a fresh state over a long period of time further, stimulating consumers' attractiveness to consumers and appetite and being connected with gains of sales rather than before in meat, especially tuna fish meat. Although this reason is not certain, in order that MIOGURABIN containing the divalent iron ion contained in meat may change to METOMIO Glavine who contains trivalent iron ion with carbon monoxide gas, it is thought that the fall of coloring and flavor is controlled.

[0020]Next, concrete data is shown and this effect of the invention is explained.

[0021]The same object - Quadrisection was prepared perpendicularly, three-piece 1 set of samples were horizontally prepared for the frozen swordfish preserved in frozen storage at 50 °C trichotomy, clarification, and immediately after slicing further and extracting 12 8.0x5.5x2.5-cm stakes, and the following processing was carried out about each.

[0022]1. Surface METOMIO Glavine % (it is only described as metMb% below.) measurement metMb% of the measuring method deleted 1-2 mm of surfaces of the fish, measured the absorbance of 503 nm and 540 nm for the extracted coloring matter with the spectrophotometer, and computed and calculated 540/503 of ratios. Refer to (tail Tooru Fujikata, Nissui, 36 and 534, 1965) for the detailed method.

[0023]2. Carbon monoxide gas was contacted in the well-closed container by the aforementioned method, and it was made to absorb. Conditions at this time - It specified in 3 °C, 1 atmosphere, and 2 hours, and it put into the bag made of after-processing vinylidene chloride resin, contact with air was intercepted, and it refrigerated at 5 °C.

[0024]3. It put into the bag made of vinylidene chloride resin at -3 °C, and after filling up with and sealing 200-ml nitrogen gas, it refrigerated at 5 °C.

[0025]4. It put into the bag made of vinylidene chloride resin at -3 °C, and after filling up with and sealing 200 ml of carbon dioxide, it refrigerated at 5 °C.

[0026]After refrigerating the sample of 2-4 at 5 °C for 6 hours, metMb% was measured by the same method as the sample 1. metMb% of the measured value obtained from the sample of 1-4 is shown in drawing 2. It is shown that discoloration advanced, so that the measured value of metMb is large. Therefore, it is clear the method's of this invention to excel the method of enclosing conventional nitrogen gas or carbon dioxide, in the effect which controls discoloration of stake.

[Translation done.]